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EDUCATION FOR ECONOMIC SECURITY ACT

JUNE 13, 1983.—Ordered to be printed

Mr. HATCH, from the Committee on Labor and Human Resources, submitted the following

REPORT

[To accompany S. 1285]

The Committee on Labor and Human Resources, reports an original bill (S. 1285) to improve the quality of mathematics and science teaching and instruction in the United States, and for other purposes, without amendment and recommends that the bill do pass.

I. FINDINGS

The United States faces an educational challenge of immense proportions. We face a crisis in the quality of the mathematics and science education, which is increasingly necessary for our citizenry to perform the demanding jobs which our prosperity, our security, and our liberty require. Our crises in mathematics and science education adversely affects this nation's ability to defend itself, to compete effectively in the world's economy, and to prepare its citizenry for enriched lives in an increasingly technological world. The quality of mathematics and science education in America has declined in the last 20 years, and this deterioration threatens everything we have achieved and hope to achieve as a nation. The decline must be reversed. The Committee feels that the necessary effort to stem the decline must come from all levels of society—from our families, towns, states, public schools and private schools, and from the federal government. Education can succeed nationally only when responsibility fore education is broadly accepted. The Committee believes that a federal response to the mathematics and science crisis before us is a necessary component to inspire and buttress the initiatives of private individuals and local officials all over America.

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The recent report of the National Commission on Excellence in Education, "A Nation at Risk, the Imperative for Educational Reform," describes forthrightly the deteriorating condition of American education. The most striking sections of this report note the shocking deficiencies in mathematics and science instruction, standards and course requirements. Severe shortages of teachers qualified to teach mathematics, science, computer instruction, and foreign languages, fewer students taking these courses, and fewer skilled technicians and well-trained scientific personnel, are clear examples of educational decline in mathematics, science and foreign languages. The federal government can not and should not address all of these concerns directly, but can provide resources to help improve the quality and number of mathematics and science teachers, promote cooperative programs and foster a national assessment of educational needs.

Student achievement

Evidence of declining participation and performance in courses in mathematics and science is overwhelming. Among the most publicly notable is the dramatic decline in Scholastic Aptitude Test (SAT) scores over the last two decades of students intending to pursue postsecondary education. The mean SAT score in mathematics dropped from 502 in 1963 to 466 in 1980, while the proportion of students scoring over 700 on the test dropped 15 percent between 1967 and 1975.

Alternate ability measures confirm the conclusions which may be drawn from the decreasing SAT scores. Science achievement scores for United States 17-year-olds, as measured by three National Assessments of Educational Progress, declined significantly in recent years, and the average achievement by high school students on some tests is lower than that of 26 years ago—the time when Sputnik was launched. Similar declines have been noted in the mathematics scores of 17-year-olds—especially in the higher order skills of problem solving and mathematical application. One Committee witness reported a decline of nearly 9 percent from 1973 to 1978 in the problem solving skill levels of 9-year-olds, clear evidence that decline in mathematical ability has occurred across grade levels.

Particularly disturbing is the decline in mathematics and science skills of of this nation's best students, those students who will be called on to provide the leadership needed to tackle our technological and economic challenges. According to one assessment, mathematics and science skills for this group in three different age groups fell from three to four percentage points.

While some students have benefitted from opportunities for advanced work in mathematics and science—as evidenced by their performance on advanced placement tests—adequate mathematics and science courses are not available for many talented and motivated students. Currently, on a nationwide level, only 34 percent of the United States high school graduates have completed three years of mathematics. As many as one-third of secondary schools in the United states do not offer sufficient mathematics to allow their graduates to qualify for admission to accredited engineering schools. In the high schools that do offer courses in advanced math-

ematics (about one-third of all schools) only 8 percent of the students participate in the calculus courses. According to the National Council of Teachers of Mathematics, a recent survey of students at the University of California showed that 92 percent of the women and 43 percent of the men in the freshman class were not qualified to participate in three-quarters of the possible majors for lack of sufficient mathematics.

The trends of declining competence are even more pronounced for students planning to enter the teaching profession—that group of students whom this nation must trust to motivate and encourage future students of mathematics and science. High school seniors bound for teacher education scored, on the average, 48 points below the national average in the mathematics skills section for the Scholastic Aptitude Test. Certainly, improvement in the performance of the next generation of mathematics and science students is dependent on improving the performance of this generation's mathematics and science teachers.

Industrial dilemma

The pervasive decline in mathematics competency among this nation's students threatens America's ability to sustain the technological revolution that is essential to the general welfare. High technology lights the way to the future. Not only will sophistication be the hallmark of new industries, it will also characterize the rejuvenation of America's industrial base. It has been projected that the next seven years will see an increase of data processing mechanics by 148 percent, computer analysts by 108 percent, programmers by 74 percent, computer operators by 88 percent, and office machine personnel by 81 percent. Some futurists have predicted that by 1990 between 40 and 50 percent of American workers will use electronic-technical equipment daily.

Testimony before the Subcommittee on Education, Arts and Humanities clearly demonstrates that a lack of personnel competent in mathematics and science is among the most critical problems confronting America's high technology companies. While many of these firms have created their own training programs, most firms are finding it increasingly difficult to find people sufficiently qualified to be trainees.

Testifying on behalf of Electronic Data Systems, Gilbert Johnson told the Committee that only 75 of 1,500 applicants were qualified for the 140 technical positions that were open in his data systems group. Mr. Johnson elaborated upon the problems of his firm:

> The principal academic reasons most applicants fail to meet our employment standards for entry-level technical positions are low grades, a weak background in the basics of mathematics and general science, and little, if any, data processing related work. Even after we have hired candidates who appear to meet our standards, we are often disappointed by their inability to apply simple logic and reasoning to the problem solving process, and more often than not they have poor written communication skills.

A paucity of engineers

The shortfalls in qualified manpower experienced by many of the nation's more technologically sophisticated firms are largely a reflection of our inability to produce sufficient numbers of qualified engineers on whom this nation must rely to drive technological innovation. International competitors are far outpacing the United States in the number and proportion of electronic engineers who graduate each year—five times the number that graduate in the United States. For every million people, the Soviet Union annually graduates 260 electrical engineers, Japan graduates 163, and the United States a mere 67. For every 10,000 people in the United States, 70 are engineers while in Japan, the number is almost six times that number. Engineering accounts for only 7 percent of the total undergraduate degrees in the United States, 21 percent of those in Japan, 35 percent of those in the Soviet Union, and 37 percent of those in West Germany. A survey of the members of the American Electronic Association conducted two years ago projected a shortfall between our need for new electrical and computer science engineers and the new supply from colleges of some 20,000 annually through 1985. The Bureau of Labor Statistics predicts that electrical engineering jobs alone will increase by 150,000 by 1990.

It seems unlikely that this demand can be met by engineering schools which are now experiencing some 2,000 to 2,500 (approximately 10 percent of the total) engineering faculty shortages—vacancies which approach 50 percent of the total number of faculty in some high technology specialty areas. This country needs 1,000 new engineering instructors each year over the next decade just to remain steady; we are now producing only 450.

Teacher shortages

Since superior teachers of mathematics, science and technology can motivate students to do well in their courses and consider technically- or scientifically-oriented careers, the documented shortage of competent teachers must be considered a prime cause of decreasing student participation and achievement in mathematics, science and technology. Most states are suffering from these shortages, and in some states the shortages are critical. In 1981, for example, 43 (of 45 responding to a survey) states reported a shortage of mathematics teachers. Other researchers surveying this trend have found that 22 percent of all high school teaching posts in mathematics and science are vacant nationwide. For physics teachers, 42 states reported shortages, for chemistry teachers, 38 states reported shortages. Ten states reported *critical* shortages of chemistry teachers with even more states having critical shortages in mathematics and physics.

The problem continues to be exacerbated by the relatively high wages that people with mathematics and science backgrounds command in non-teaching jobs. The average salary of beginning mathematics teachers with bachelors degrees is now only 60 percent of that offered by private industry to similarly qualified candidates according to the Education Commission for the States. Twenty-five percent of the mathematics and science teachers surveyed by the National Science Teachers Association indicated that they were

planning to leave teaching for better paying jobs in industry. In 1980 almost five times as many mathematics and science teachers left the classroom for other jobs as retired.

On top of this, only 55 percent of the graduates prepared to teach mathematics actually enter the teaching profession. At this rate, the nation could have a net loss of 35 percent in the number of qualified mathematics and science teachers by 1992. The National Council of Teachers of Mathematics has provided data showing a 77 percent decline in the number of secondary level mathematics teachers prepared in the last ten years. The situation in Missouri illustrates dramatically the extent of the decline in some states. In 1973 the number of college graudates eligible for certification in the teaching of mathematics was 443; in 1982 the number was 57.

The problem of actual teacher shortages is further complicated by the number of instructors teaching courses in mathematics and science for which they are not qualified. As an interim measure to address teacher shortage problems, many school districts are forced to fill mathematics and science teaching positions with teachers unqualified for or uninterested in the subjects they are to teach. The Education Commission of the States reports that 26 percent of all mathematics positions are filled by teachers who are not certified or who are only temporarily certified to teach mathematics. The number of teachers in this group seems to be expanding.

In addition there are few opportunities for certified mathematics and science teachers to update or broaden their skills, to keep abreast of the rapid advances of mathematics, science and technology. A similar paucity of opportunity for inservice training seems to exist for teachers not certified to teach specific subjects of mathematics and science. Lack of up-to-date instructional material and the obsolescence of laboratory equipment continue to plague schools wishing to attract able teachers of mathematics and science.

Foreign languages

The world is increasingly an international community. The ability of this nation to participate in that community, to compete effectively, to negotiate, and to trade depends on having a sufficient number of Americans who can speak the languages of nations with whom we deal. In 1980 the President's Commission on Foreign Language and International Studies reported its "profound alarm" at the "serious deterioration" they found in United States foreign language capacity. Eighty percent of the world's population speaks Chinese, Japanese, and Arabic, yet only one percent of all United States public school students are enrolled in these courses nationwide. From another perspective, one out of six Americans owes his job to foreign trade, yet it has been alleged that Americans lose 100,000 jobs a year because two few of us know a foreign language.

Part of the problem we face is the steady decline in foreign language study at all levels over the last two decades. According to the Joint National Committee for Languages, only 15 percent of all United States high school students study foreign languages, down 9 percent from 1965. At the higher education level, 34 percent of the number of colleges and universities surveyed required entering stu-

dents to have a background in a foreign language in 1965; now only 8 percent do.

Testifying before the Subcommittee on Education, Arts and Humanities, Richard Brod of the Joint National Committee for Languages provided an optimistic note as he outlined some of the institutional changes which are being made in face of the continued increase in demand for language training and skills. He noted that "Americans seem finally to be coming around to realizing that our national deficiency in lauguage competence has weakened us economically and in other ways. Interest in language is growing, and its value is coming to be recognized both by our leaders and the public at large." Dr. Brod goes on to note that a recent survey by his organization shows that 66 percent of the colleges and universities now have language requirements, compared to 54 percent five years ago. The trend is encouraging—yet points to the sharp increase in demand for teachers which occur as institutions continue to strengthen their language requirements. This increase in teacher demand will continue to coincide with the surge in demand for people trained in the increasingly critical foreign languages of Chinese, Japanese, Arabic and Russian. The shortage of teachers qualified in critical foreign languages continues to hinder the nation's response to this demand.

Special populations

While declining achievement in mathematics and science is largely due to a widespread disinterest in mathematics and science study, the cultural disincentives for women and minorities have been particularly strong. Proportionately fewer women and minorities have mathematics and science backgrounds, and therefore these Americans are woefully underrepresented in jobs that require these backgrounds. The programs initiated by this legislation are intended to increase the participation in mathematics and science study of those populations traditionally discouraged from technologically-related careers.

While women represent more than 51 percent of our population and 43.2 percent of our workforce, they represent only 3 percent of the number of this nation's engineers. In the short-term, increased participation of women in engineering looks doubtful as only 10 percent of the bachelors degrees in engineering are earned by women. Further, standardized tests in the United States indicate that the scores of females in mathematics are significantly lower than those of males, consistently, for example, lower by 50 points on the mathematics portion of the Scholastic Aptitude Test. The Graduate Record Examination in mathematics shows results with an even greater disparity.

Historically, most of these differences can be traced to a dearth of women in advanced courses and the discouragement of female participation by parents, teachers, counselors and peers. The underrepresentation of females in both courses and careers where mathematics and science are fundamental may be further attributed to the scarcity of appropriate female role models. Advanced mathematics courses, for example, are most often taught by men.

The situation for blacks and other minorities is similar. According to Department of Commerce figures recently published, blacks

account for only 5.1 percent of those employed in mathematics and computer science fields and only 5 percent of all chemistry-related occupations. In engineering, one of the largest technical job markets, blacks account for only 2.4 percent of those employed. As with women, blacks are shut out from opportunities in the technological job market primarily because of their underrepresentation in the relevant courses of study. Representation of blacks in programs at four-year colleges and universities is limited to under 5 percent of all mathematics degrees, and to less than 3 percent of all degrees in engineering and science. In addition, more than 40 percent of all blacks in higher education attend two-year community colleges, where course curricula are less likely to lead to the baccalaureate degree which is required for many scientific and technological professions.

As the percentage of women and minorities in our workforce increases and the demand for workers who have skills requiring mathematical, scientific or technological training increases, these groups should not be ignored in the national effort to upgrade mathematics and science education. To do so would be to ignore their potential contributions to our nation's defense capabilities, economic well-being and social stability.

Resources

Mediocrity in mathematics and science education must be met and defeated by the full resources of the nation. A comprehensive response must involve parents, schools and non-traditional sources such as museums, libraries, educational television stations, professional associations and other such organizations.

Roger Nichols of the Museum of Science in Boston testified that the revitalization of the science museum has coincided with the increased reliance by local schools or museums and libraries for supplemental programs in mathematics and science, for programs that complement curricula, and for the "hands-on" computer and laboratory work that schools, for economic reasons, are increasingly unable to provide. The Association of Science-Technology Centers reports that 93 percent of its member science centers work directly with schools to provide educational services, 89 percent provide programs especially for teachers, 75 percent have outreach services that bring programs into the school, and 33 percent cooperate with universities to offer training for degree programs such as graduate-level teacher in-service training. Included in the programs offered are access to computers and programs in computer litercy, development of curriculum projects, priority access for special groups, and programs for gifted and talented students.

Equally promising are the opportunities for mathematical and scientific teaching and awareness offered by educational television stations. Over 90 percent of the public television stations now provide instructional programming for elementary and secondary classrooms or for credit courses for colleges and universities. More than 15 million school children use such instructional programming at a yearly cost per child that is substantially less than most single textbooks. At colleges and universites, over 55,000 students at more than 550 institutions are enrolled in the first year of the PBS Adult Learning Service—at a fraction of the normal course

cost. According to Stephen Salyer of WNET in New York the development, in collaboration with master teachers, of programs able to present concepts and dynamic processes difficult to illustrate on a black-board or in a textbook has had a dramatic effect on arousing and sustaining student interest in mathematical and scientific pregress.

The resources of mathematical and scientific societies constitute another enormous pool of talent and expertise that are available to be tapped for such projects as curriculum development, teacher skills development, and increased participation of women and minorities in mathematics and science. The American Chemical Society, for example, is actively involved in many of these kinds of projects, especially projects aimed at increasing public understanding of mathematics and science and providing opportunities for high school teachers in conduction with local branches of the Society.

As another example, the American Society of professional Engineers, in partnership with the National Council of Teachers of Mathematics and private industry, has developed a new program called "Mathcounts", a national mathematics contest for seventh and eighth grade students, to be operated through its constituent state societies and local chapters. In addition, ASPE has promoted inventories of laboratory equipment at colleges and universites.

Cooperative ventures between museums, libraries, educational television stations, and mathematical and scientific organizations and educational institutions comprise a significant portion of the unified action this nation must take to overcome our present instructional inadequacy in mathematics, science, computer learning and foreign languages.

II. STATEMENT OF PURPOSE

It is the purpose of this legislation to promote public awareness of the problem, to facilitate communication between scientists and educators, to provide incentives for cooperation and joint projects between educational institutions and the private sector, and, perhaps most importantly, to assist state and local education agencies in providing teacher training, retraining and inservice training in mathematics and science.

III. BRIEF SUMMARY

Title I of the bill authorizes $45 million for fiscal year 1984 and $80 million in fiscal year 1985 for programs to be carried out by the National Science Foundation, including teacher institutes, materials development, graduate fellowships, undergraduate scholarships, and discretionary projects.

Title II is primarily a formula grant adminstered by the Department of Education and carries an authorization of $350 million for fiscal year 1984 and $400 million in fiscal year 1985. Of these funds, 10 percent will be held by the Secretary for discretionary projects, and 90 percent allocated to states on a formula basis. Of the funds allocated, 70 percent will be passed through to the local education agencies within the state. Funds for this title will be

used primarily for programs of teacher traineeships, and retraining and inservice training for current teachers.

Title III provides opportunities for the private sector and educational institutions to form partnerships for special projects in mathematics and science education. This title authorizes $30 milion in fiscal year 1984 and $60 million in fiscal year 1985 for these projects, which will require a 50 percent match. Awards under this title will be made by the National Science Foundation.

Title IV authorizes the President to make awards for teaching excellence to elementary and secondary classroom teachers.

S. 1285: EDUCATION FOR ECONOMIC SERCURITY ACT

[In millions of dollars]

Program	Fiscal year—	
	1984	1985
National Science Foundation:		
Teacher institutes	20	20
Materials development		20
Congressional merit scholarships	5	15
Director's discretionary		4
Graduate fellowships	20	21
Subtotal	45	80
Department of Education:		
Secretary's discretionary (10 percent)	35	40
Allocated to States (90 percent)	315	360
Suballocated to LEA's (70 percent)	220.5	252.0
State higher education agency (30 percent)	94.5	108.0
Subtotal	350	400
Partnerships in education (NSF)	30	60
Subtotal	30	60
Total authorization	425	540

IV. COMMITTEE VIEWS

It is the intent of the Committee to provide additional resources for necessary efforts to increase the quality of mathematics and science instruction. To the extent that putting a program into place which addresses this critical issue cannot wait for financially strapped local school districts and states to devote their own revenues for this purpose, the Committee believes that federal assistance of the kind provided in S. 1285 is appropriate and necessary. The Committee affirms that the future of our nation depends on the education of our children and that the disturbing decline in mathematics and science education, in particular, will continue to have serious adverse effects on the economy and security of our country unless steps are taken to reverse this trend.

Title I—National Science Foundation mathematics and science education programs

Teacher institutes

The Committee has authorized $20 million for both fiscal year 1984 and fiscal year 1985 for NSF to award grants for teacher institutes. Testimony presented during committee hearings endorsed the concept of teacher institutes along the lines of a previous National Science Foundation program during the early 1970's. The institutes authorized in this legislation, while based on the former program, differ from it in that applications must be submitted jointly by an institution of higher education and a local education agency (LEA). The application may include more than one university or more than one school district. (It should also be understood that throughout this legislation all institutions of higher education will be referred to as "universities" and that the use of this reference does not exclude two- or four-year colleges.)

Additionally, a partnership must be formed within the university between the department of education and the particular department of science or mathematics (e.g., chemistry, biology). The purpose of these linkages is to foster cooperation and a more comprehensive approach to teacher institutes. While the university may possess certain knowledge about the latest scientific developments and teaching techniques, the local education agency can supply insight on the practicality of the subject matter taught at the institute as well as on the operation of the institute itself, such as scheduling. Further, the Committee believes that education can benefit from better communication and less fragmentation among the various entities which can make significant contributions.

The Committee recognizes that most teachers necessarily work at other jobs during the summer to supplement salaries that are often insufficient to support families. For that reason, the Committee has specifically authorized the payment of stipends to teachers who attend institutes, though the legislation permits the institute (i.e., the university and LEA) to determine the amount and procedures for paying expenses and allowances. The only limitations are that the teacher may not receive a stipend from another federal source, including Title II of this bill and the overall ceiling of $200,000 on each institute award.

The Committee encourages consultation by the institutes with professional scientific societies and associations, businesses and business organizations. Testimony indicated that a number of scientific societies have been actively involved in science education activities and would have important insights for the the institutes. Concurrently, businesses concerned with technology, education and training, or textbooks and educational materials may offer valuable assistance to the institute.

The Committee also expects programs supported under this part to give special consideration to the needs of underrepresented and underserved populations, including girls and women, minorities, limited-English proficient students, the handicapped and migrants.

Materials development

Part B established a program for material development. Like the institute program, the concept of cooperation and sharing of expertise has been incorporated. In this program, a university or a LEA may receive the grant, but the grantee must have the participation of the other entity. The same assurances regarding the cooperation of both the education and subject matter departments as required in the teacher institute program must also be given for projects in materials development. The Committee agrees that the development of courses in teaching methods without "state-of-the-art" scientific content are not needed, as the strict science courses without regard to the consumers of such courses.

Additionally, the program should make the results of the development projects known. The Committee finds that it makes little sense to spend $20 million in fiscal year 1985 for new, up-to-date materials for teacher training and student learning and not allow for their dissemination. However, the Committee warns the NSF that "dissemination" does not mean the forced implementation of new materials produced under this Part in any school district, nor does it mean a mass reproduction and distribution of the materials even to willing users. The Committee sees no role for the National Science Foundation, or any federal agency, such that it becomes a competitor of private textbook or educational materials publishers. However, NSF is encouraged to become a catalyst for the improvement of materials produced by such publishers. Accordingly, the Foundation should consult with private textbook publishers concerning methods for the proper and effective dissemination of information and materials resulting from this program.

As with teacher institutes, the Committee expects the Foundation to make every effort to ensure that the needs of the special populations mentioned above are met.

Excellence in teaching awards

Part C authorizes the National Science Foundation to identify and present awards to individual classroom teachers who have exhibited superior teaching ability and dedication to their students. A cash award is authorized, not to exceed $5,000, which shall be given to the individual teacher as a personal reward for service, initiative and ability. The teacher shall not be obligated to turn the amount of the award over to his or her school or school district.

The Committee also encourages coordination between the awards authorized by this part and by Title IV of the Act. Funds for carrying out the provisions of this part are provided in the Director's Discretionary Fund.

Congressional merit scholarships

The NSF is also authorized to establish a program of merit scholarships for students choosing a career in mathematics or science education. In an attempt to elevate the status of teaching as a career, the scholarships have been designated as "Congressional Merit Scholarships in Mathematics, Science, and Engineering Education." The Committee finds that the importance of the teaching profession has been sadly underestimated over the last decades, a

situation that is reflected by the decline in teachers' salaries relative to other professions requiring a college degree and other specialized training. It is hoped that these scholarships will not only alleviate some financial burden of the college education for those intending to pursue teaching in mathematics and science, but will also provide long-deserved recognition of classroom teaching. $5 million has been authorized for the scholarship program for fiscal year 1984 and $15 million for fiscal year 1985.

Director's discretionary fund

Part E provides the NSF Director with a modest amount of money to supplement programs authorized by this Act, to fund a program of faculty exchanges, or to fund unsolicited proposals which promote the purposes of this Act, but do not fit into the particular program categories established by Title I or Title III. It is, of course, expected that such proposals will be subjected to the same peer review and selection process as any other application submitted to NSF.

The Committee finds the suggestion of faculty exchanges between diverse universities intriguing and potentially valuable to upgrade the quality of science in eligible institutions. Due to the uncertainty, however of the number of established scientists that would participate in such a program, the Committee opted to allow funding for such proposals through the Discretionary Fund. NSF is requested to report to the Committee on the number of proposals received for such faculty exchange programs.

Title II—Department of Education programs

Title II provides for a program of formula grants to states and discretionary grants by the Secretary of Education, to be administered by the Department of Education. The program is authorized at a level of $350 million in fiscal year 1984 and $400 million in fiscal year 1985. Ninety percent of amounts appropriated under Title II is to be distributed with 10 percent reserved to the Secretary of Education for discretionary grants for progrmas of national significance under section 212. An additional 1 percent is authorized for programs of assistance to the possessions and territories, and for programs for Indian children. Not less than one-half of these latter funds are to be used for Indian children, and the Committee does not specifically intend that these latter amounts will be transferred by the Secretary to the Department of the Interior, but will be distributed by him in a manner which he determines will best serve the mathematics and science education needs of Indian children, and the training needs of mathematics and science teachers in Indian schools.

Funds allocated to states under Title II are apportioned in the following manner: 70 percent is to be used by the state educational agency principally for the improvement and expansion of inservice training and retraining of existing teachers in elementary and secondary schools at the local educational agency level. The remaining 30 percent of the state allotment is to be used by the state agency for higher education for programs, principally operated by institutions of higher education, for inservice training of elementary, secondary and vocational school teachers, retraining of math-

ematics and science teachers at the secondary level, and traineeships for prospective teachers who intend to specialize in teaching mathematics or science at the secondary level.

Elementary and secondary programs

The Committee believes, and testimony before the Education Subcommittee has confirmed, that the greatest need for improvement of mathematics and science instruction is at the elementary and secondary levels of instruction. Similarly, the Committee has concluded that the focus of any federal effort to improve instruction at these levels must be on classroom teachers. Therefore, Title II provides that 70 percent of the amounts reserved within each state for elementary and secondary programs be distributed to local educational agencies for the improvement and expansion of inservice training and retraining of teachers and other school personnel, including principals and guidance counselors, in the fields of mathematics and science. It is intended that LEA's will have maximum flexibility in determining the type of teacher training, retraining or inservice training they wish to implement. Such programs could include, for example, the payment of expenses and/or stipends for teachers to take for-credit courses in math and science at an accredited college or university for the academic year.

The Committe urges the LEA, in conducting teacher training, to provide teachers with those techniques, methods and materials aimed at encouraging and retaining underrepresented groups in mathematics and science education programs. These techniques, methods and materials are already in existence and simply need to be incorporated into general teacher training programs.

The Committee appreciates, however, that there may be certain cases in which school districts may have already met their needs to improve or upgrade teacher training, or otherwise may determine that there are no problems of teacher shortages or teacher deficiencies. Therefore, section 206 provides that, if a local education agency can demonstrate that it has met its teacher training and retraining needs in the areas of mathematics and science, it can request a waiver from the state educational agency to conduct other activities with its allocation. If the state educational agency approves the LEA waiver, the LEA may provide programs of computer learning, foreign language instruction, or may use its funds to provide instructional materials and equipment related to mathematics and science instruction. In no instance may more than 30 percent of a LEA's allotment be used for computers and computer-related equipment, such as software, nor may more than 15 percent of such allotment be used for programs of foreign language instruction. The Committee thus clearly intends that the emphasis of the elementary and secondary education be on teacher training. The Committee does not mean, however, to apply the 30–15 percent limitation to the use of new texts and materials for teacher training in the areas of mathematics and science in the development of the LEA programs of inservice training and retraining.

The 70 percent of funds which is to be distributed to LEAs is to be allocated among the LEAs within the states, one-half on the basis of relative population of school-age (5–17) children and one-half on the basis of relative allocations for Chapter I of the Ele-

mentary and Secondary Education Act. The Committee believes that all districts will demonstrate need for assistance in mathematics and science instruction, but that poor districts, as manifested by the Chapter I allocations, will need additioinal help.

The Committee recognizes that the allocation formula may result in small districts receiving limited assistance under section 206. Therefore, the Committee, in providing that programs under this section may be carried out under agreements with other entities, including SEAs, or may be operated through combinations of LEAs, wishes to encourage such arrangements wherever possible, in order to reach the maximum number of teachers at the widest range of grade levels, and in order to achieve necessary economies of scale.

The remaining 30 percent of funds allocated for elementary and secondary programs is to be used by the state educational agency for demonstration and exemplary programs within the state, for technical assistance to the state's LEAs and other entities engaged in mathematics and science instruction and for defraying the costs of the state assessment required under section 208 and the state administration of the program. Two-thirds of the 30 percent SEA funds or 20 percent of the state total for elementary and secondary programs is to be used for exemplary programs and demonstrations of teacher training, for instructional equipment and materials, and for special projects for historically underserved and underrepresented individuals, including the gifted and talented.

Although it is required that the SEA use not less than 20 percent of its exemplary project funds for programs for historically underserved and underrepresented populations and for the gifted and talented, the Committee does not intend such a reservation of funds to be used as a cap on assistance for such groups in need of assistance, but rather as a spending floor. In sections 206, 207 and in section 212, relating to the Secretary's discretionary fund, the Committee wishes to emphasize its belief that these groups should receive special consideration in the development of teacher training and instructional programs.

The Committee emphasizes that these funds should not be used to provide separate mathematics and science classes for historically underrepresented populations. Rather, states should support programs designed to increase access and achievement of such students in mathematics and science fields. These programs could include, (1) counseling programs and career workshops to increase knowledge of and access to scientific and technical careers, such as the "Women in Medicine" currently being operated by the Harvard Medical School, (2) extracurricular activities, such as after-school programs offering hands-on or practical experience with computers and other equipment, or, (3) programs for counselors, teachers, students, and parents to increase awareness of the status of underrepresented groups in mathematics and science programs and of the need for mathematics and science in future careers.

Although the Committee believes that the greatest need for improvement in the areas of mathematics and science instruction is to be found at the elementary and secondary levels, it also has found that cooperation among local schools, institutions of higher education, and other entities in providing teacher training programs and non-academic programs of instruction can be of consid-

erable impact in recruiting and retaining teachers and upgrading their skills, and in encouraging student interest in mathematics and science.

Of the 30 percent of funds available to states for use under section 207 for higher education programs, 75 percent is to be used by the state agency for higher education for grants to institutions of higher education to: (1) establish traineeship programs for undergraduate students who intend to go on to teaching careers in secondary level mathematics and science; (2) retrain secondary school teachers not currently specializing or not currently qualified to specialize in mathematics and science at the secondary level to enable them to teach mathematics and science at that level; and (3) provide inservice training to elementary, secondary, and vocational school teachers to improve their teaching skills in the area of mathematics and science.

The Committee expects that programs operated by institutions of higher education, like programs operated by LEA's, will sensitize teachers to the special needs of the historically underrepresented populations.

The Committee intends, and section 207 specifies, that programs of retraining and inservice training be based on cooperative agreements between a local educational agency, or group of such agencies, and the recipient institution of higher education. The Committee also intends that assistance for retraining and inservice training may be used to provide students with stipends to help them attend the institutes authorized in Title I. The Committee does not intend to preclude an institution of higher education which receives a grant to provide a teacher institute under Title I from receving assistance from the state agency for higher education under section 207.

Section 207 authorizes each state's agency for higher education to make these grants on a competitive merit basis, to independent as well as to public institutions of higher education. The Committee is concerned that the criteria established for the selection of grantees ensure that private and public institutions are treated fairly and equitably, since is has been the Committee's understanding that, in some states, private institutions have been inadequately represented within the state agency for higher education. It is expected that the state agency will consult freely with its private and public colleges and universities, as well as with state and local educational agencies, professional organizations, parent and teacher groups, and other experts, in developing these criteria. The Committee anticipates that, to the maximum extent feasible, the state higher education agency will use appropriate peer review procedures to ensure the selection of the most distinguished and effective grant proposals. Therefore, it is the intent of the Committee that the state agency for higher education will have maximum flexibility to determine which of these permissable activities will best serve the state and community.

Not less than 20 percent of the funds available to the state agency for higher education is to be used for cooperative programs designed to improve student understanding of and performance in mathematics, science, and critical foreign languages. The Committee has learned that the earliest experiences with mathematics, sci-

ence, and foreign languages may not take place in the school setting, but in the home or in other types of institutions, such as libraries or museums. Public broadcasting programs such as 3-2-1-Contact and NOVA, among others, have fostered initial student interest in science and have helped to increase public awareness and understanding of important scientific and technological issues. The Committee believes that educational television stations are capable of contributing costs-effective and comprehensive solutions to the training of teachers, students, and the general public in these areas. Recognizing that the broadcast medium frequently does not respect state boundaries, the Committee expects that multi-state arrangement with educational television stations will be encouraged by the state higher education agencies and, in programs under section 212, by the Secretary, in order to achieve the goal of reaching the widest possible range of the population.

The Committee is also cognizant of the excellent work done both within and outside the regular school system by professional mathematics, science, and engineering organizations. These associations have developed curricula for the schools, helped bring professional practitioners into the school system, developed educational television programming and special programs for teachers and students. These associations have also promoted public understanding of scientific and technological issues. Therefore, the Committee intends that they be able to participate equitably in the programs authorized under sections 207 and 212

State and local assessments

Although the Committee has proposed S. 1285 as a two-year measure, it recognizes that the problems of mathematics and science education, and of technological literacy, are more than short-term crises which can be solved by a quick-fix law. The problems have been long in the making, and will require sustained attention at all levels of educational governance, to solve them. Therefore, the Committee views S. 1285 as the first step in a longer-term federal response to the crisis in mathematics and science education, the first building block in a sustained effort to reverse this nation's decline in achievement.

With a view toward building this more sustained effort, Title II provides, as a requirement to receive funds, that states and school districts must provide a description of the current situation in mathematics and science education, a five-year projection of that situation, and must describe programs undertaken to ameliorate, where specific needs exist, problems of teacher recruitment, qualifications, curriculum, and lack of adequate instructional materials. It is the intention of the Committee that the assessment examine the adequacy as well as the avialability of such material. If, for instance, state and local educational authorities determine during the course of the assessment that current curricula and instructional material satisfy educational needs, but simply are in short supply, they should so state.

The state assessment is to be completed by the end of the first year in which funds are received, and it is expected that the state assessments will incorporate the findings of the local educational

agency assessments required under section 210, but will in fact be more comprehensive than those local assessments.

Evaluation and policy analysis

With a view toward a sustained effort to improve mathematics and science education, the Committee recognizes the need for a national analysis of mathematics and science education policy. This analysis should not only study the effectiveness of the means employed through current legislation, but should also examine the feasibility and desirability of alternative policy approaches. The Secretary of Education shall direct the National Institute of Education to conduct such a study from funds from the Secretary's discretionary fund. The Committee hopes that this analysis will focus on policy measures designed to attack the most significant problems our country faces in its efforts to upgrade the quality of mathematics and science education, particularly those of the recruitment and retention of qualified mathematics and science teachers. Further the Committee agrees that such a study should review the extent to which the problems in mathematics and science education are acute and chronic, and the implications of these findings for the duration and type of federal assistance that may be required.

The Secretary of Education shall also direct NIE to conduct an annual evaluation of the implementation of current legislation. The Committee recognizes that the two-year authorization of this legislation is an inadequate period of time in which to measure the impact on students, and does not expect the NIE evaluation to judge the effectiveness of the legislation by testing students. The Committee believes, however, that the evaluation should focus on the implementation of this legislation, and analyze and recognize effective programming as well as the pitfalls of poor program design and ineffective implementation. The Committee feels that such an evaulation will provide invaluable information for judging the success of the legislation, as well as recognizing where the legislation can be strengthened or streamlined. Also, the Committee, by authorizing this function by the NIE, does not intend to preclude state, local, or independent evaluations of this program's efforts, or of the changing nature of mathematics and science education.

Title III—Partnerships in education

Title III directs the National Science Foundation to establish a program of matching federal grants to local education agencies, institutions of higher education, and states which establish Partnerships in Education. The Partnerships in Education will encourage cooperation among local and state officials, educators, and industry leaders to improve the quality of mathematics, science, and engineering education. Funding will be provided on a matching basis: 50 percent federal authorizations under this Title; 30 percent private business contributions, and; 20 percent from any other non-federal sources.

The Committee recognizes that educational institutions alone cannot meet the nation's need for improved mathematics and science instruction. Only through a partnership among business,

schools, government and other concerned partners, can we adequately mobilize our educational system for economic growth. Industry must play a major role in providing direction, expertise and investment. Many companies have recognized this need. They see their investments in education not just as charitable gifts, but as an important element in their long-term competitive strategy. More and more companies are instituting university programs to strengthen technological education and joint research ventures. Major corporations are contributing resources to local school districts, "adopt-a-school" programs, and local Chamber of Commerce initiatives in the primary schools. For the purposes of this title, a predominantly self-sustaining governmental corporation such as the Tennessee Valley Authority, which has the characteristics of a for-profit, private sector business concern, may be considered a "business."

Similarly, state governments are also recognizing the importance of education in mathematics, the sciences, engineering and advanced technology in meeting their objectives for economic development. Many states have begun programs to invest in cooperative education programs with their public and private universities in order to attract new firms. The National Governors Association has recently established a Task Force on Technological Innovation, reflecting this growing recognition of education as a tool for economic development.

The Committee has selected the NSF to direct the Partnership in Education program because of its excellent track record in administering competitive merit-based grant programs.

Under Section 308 the NSF shall establish guidelines for the proposal process and shall establish the criteria for making awards for the projects. Final selection of awards shall be made by the NSF on the basis of quality and merit. In the event of substantially equal quality and merit among applicants, the Committee intends for grants to be made so as to result in the widest geographic distribution of awards among states. Additionally, to the extent possible given merit as the dominant criteria for selection, the Committee encourages NSF to give special consideration to those institutions or LEA's with experience and past success in cooperative ventures with the private sector. It is not intended, however, that Title III projects will be substituted for on-going, existing cooperative programs.

The Committee anticipates that the initiative for these Partnerships in Education will come from the grassroots level, e.g., the local educational agencies, institutions of higher education and other appropriate organizations. These institutions will reach out to the business community, seeking funding and cooperation to establish Partnership in Education programs.

These local officials and community leaders can then go on to the state administrations, seeking guidance, support and additional matching resources, using the application procedure outlined in Section 307. States are given the flexibility to use any non-federal source of funds for their non-federal share—thus giving financially-pressed states a lift into the program. Under Section 306 states are required to approve applications for grants before final proposals may be submitted to the NSF. Note that the Committee has grant-

ed the states flexibility to choose from a variety of roles in the Partnerships. Some states will be active participants in both funding and program content; others will merely provide funding; still others will only serve as a conduit for outside of non-federal funding.

The Committee believes that the involvement of governors and state administrations in the Partnerships will add significantly to the quality of proposals. The Committee does not anticipate that the role of the states under this Title will interrupt or interfere with the NSF's traditional goal of seeking excellence. State involvement simply brings more resources to bear on the problems and continues recognition of education as a primary responsibility of the states.

The purpose of this Title is to encourage local initiative for quality mathematics and science education for students, including opportunities for quality educational programs in these fields. The federal government should build on the initiatives of educators, industries and the states, not compete with them.

The Committee recognizes the distinct needs of elementary and secondary schools and post-secondary institutions. Section 305 of the Title has been organized into two parts to highlight the need for separate application procedures and permissible uses of funds for these two distinct groups.

Under Section 305(a), Partnerships in Education at the higher education level may include the use of funds for improving instruction, scholarships to student, faculty exchange programs, business, research, equipment and public information programs.

The Committee recognizes that large numbers of persons enrolling in an institution of higher education as defined in this Act enter a program administered by a junior or community college as well as that every employed scientist or engineer requires from three to five technically trained support personnel whose training is usually acquired through the community colleges and technical institutes. For these reasons, in developing guidelines for implementing this Act, the Director is encouraged to pay particular attention to both the needs of these institutions for increasing their staff competencies as well as their unique ability to supply technically competent workers in scientific fileds. Moreover, the Director, in making grants to state agencies under Title III, should encourage states to expand and build upon the cooperative industry-education programs that exist in many jurisdictions between the community colleges and leaders in business and industry.

Under Section 305(b), Partnerships in Education at the precollege level may include use of funds for teacher exchange programs in which teachers participate in private business concerns, and employees of business participate in the LEA. Use of funds may also include training and retraining of teachers, and programs which encourage students to observe, participate and work in private business concerns.

Federal funds may not be used to pay stipends directly to employees of for-profit business concerns under Section 306(a)(4)(c). Rather, funds could be spent to provide support for such personnel such as instructional materials, equipment and administrative services.

Likewise, the Committee feels strongly that a Partnership program should not become an inducement for teachers to leave public education for the private sector. Thus, under section 306(a)(4)(D) teachers and faculty receiving salary support from the Partnership program are expected to make a personal commitment to remain in teaching for three years following termination of such support.

The use of Partnership funds donated by business to provide support for employees of private business concerns to become consultants, lecturers, teaching assistants and teachers should provide LEAs with flexibility to use employees in any productive capacity connected to the classroom.

Under section 305(b)(2)(B), the Committee recognizes that state and local teaching certification requirements will govern the extent of involvement of such personnel in the classroom.

Scholarships established by institutions of higher education under section 305(a)(2) are not restricted to those students pursuing a course of study which will qualify them to teach, but are also open to students studying disciplines in mathematics, science and engineering. The Committee anticipates that a significant number of these scholarships will be awarded to undergraduate students.

Section 305(a)(2)(F) was added as an amendment by the Committee making possible use of funds for the promotion of public understanding of mathematics, science and engineering. The Committee anticipates that a significant number of these programs will include educational television production, including planning, development, and the purchase of programming. Preference should be given to media proposals which encourage young people to become interested in science and technology, which foster scientific and technological literacy and which can be adapted for home and classroom use, and which extend educational use to public institutions such as libraries and museums. The Committee wishes to emphasize, however, that programs designed to promote the public's understanding of science and math shall not promote views which could be construed as politically partisan or philosophically value laden.

The Committee's debate emphasized concern for full and equitable participation of local education agencies as grant recipients. The Committee believes a natural inclination toward higher education, which has a more traditional relationship with the business community, exists in the NSF. Although the Committee dropped an earlier drafted restriction to set aside at least 35 percent of grant funds for LEAs, the Committee does admonish the NSF to promote and fund partnerships initiated by LEAs.

Likewise, a requirement for equitable treatment of the states has been added in section 308(b). The Committee believes that the NSF can properly maintain the strict requirements for a merit-based program which seeks excellence, and obtain widespread geographical distribution.

The states may obtain their 20 percent non-federal share of funds from outside sources, such as private business concerns, nonprofit entities, professional societies, or other institutions. The intent of the Committee is clear that the non-federal share must supplement, and not supplant, other federal programs.

Regional partnerships and consortia arrangements which cross state boundaries are provided for in section 306(b).

The Committee believes strongly that private schools, both elementary and secondary and post-secondary, should have equal access to grants under this title. For this reason, sections 309 and 306(a)(7) were added as amendments to expressly include private colleges, universities, and primary and secondary schools.

In order to allow full access to the program by private schools and universities, the Committee believes the use of advisory commissions should be considered by state administrations. According to the report of the National Governors Associations Task Force on Technological Innovation, 22 of 32 responding states have organizations outside state government, but with close ties to state government, that advise state policymakers on high technology issues. It is essential to the success of a highly competitive program such as the Partnerships in Education that all qualified applicants be allowed to compete for grants. To this end, the program must be operated under the advice and counsel of all institutions of higher education and elementary and secondary education, both public and private.

Title IV—Presidential awards for teaching excellence

An important objective of this legislation is to recognize the contributions of classroom teachers to our nation, and its future, and to reward individuals in the teaching profession who have demonstrated outstanding ability and extraordinary dedication. The Committee is pleased to have the support and cooperation of the President for carrying out this title.

Title IV authorizes the President of the United States to make awards recognizing excellence in teaching mathematics and science to outstanding educators from every state, the District of Columbia and Puerto Rico. In exercising his authority under this Title to make such awards, the President is to consult with other federal officials, including the Secretary of Education, the Director of the Office of Science and Technology Policy, and the Director of the National Science Foundation.

While no specific authorization of funds is designated for this Title, the Committee wishes to allow for the consolidation of the Presidential awards program and the NSF Director's awards if it is deemed appropriate by the President and the top officials he has consulted. Additionally, the Committee intends to allow the President to supplement the efforts of Part C of Title I in a manner he believes promotes the objectives of this Act.

Special provisions

Underrepresented populations

The Committee has always felt strongly that women and minorities should receive the same concouragement as others to undertake careers in science and technology. In 1980, the Congress enacted the Science and Technology Equal Opportunities Act designed to assist women and minorities gain greater access to research opportunities administered by the National Science Foundation.

The Committee recognizes, however, that mathematics and science education at all academic levels is crucial for women and minorities to compete effectively for research grants and for scientific and technical positions in academe, private industry, or the military. Most often, there is no substitute for adequate preparation. For that reason, the Committee has included provisions throughout S. 1285 mandating special consideration of proposals which attempt to upgrade mathematics and science education for women and minorities and which offer special encouragement for their participation. While these provisions should not be perceived as a license to circumvent the established review and program selection procedures, they do require attention to this problem within the larger context of promoting mathematics and science literacy and securing a sufficient and stable scientific and technical manpower pool in the future.

Prohibition on the Federal control of education

The Committee wants to reiterate its position that education is, first and foremost, a local responsibility and that citizens should provide not only the taxes required for the quality of education they demand, but also the oversight of school board decisions and their execution in the classroom. States also exercise significant policy and administrative authority. It is not a federal prerogative to interfere in any way with the individual policies of local and state school systems with respect to teacher certification, compensation and curriculum choices.

Participation of children and teachers of private schools

The bill permits the participation of children and teachers associated with private schools in the programs which have been established by this Act. This action, the Committee believes, is justified due to the appalling pervasive decline in overall scientific understanding in both public and private schools. It should be understood, however, that private schools will not be direct recipients nor administrators of funds.

The reference to "private" schools is meant to include within the meaning of the term, all non-public schools, including but not limited to parochial or church-related schools and independent schools.

Retired persons

The Committee believes that retired persons can be especially effective on either a full- or part-time basis in the nation's classrooms and can help to fill present shortages. In addition to bridging a generation gap, retired persons are able to work for on a more cost-effective basis and would not displace existing instructors. Such retired professionals, in addition to actual teaching, could assist in tutoring students requiring extra help, or in working on projects with the gifted and talented, buth activities for which a regular classroom teacher is strained to find adequate time.

The Committee, therefore, would like to encourage programs to upgrade the mathematics and science skills of retired teachers and to provide short-term training in teaching methods for retired mathematicians, scientists and engineers.

V. REGULATORY IMPACT STATEMENT

In accordance with paragraph (5)(a) of Rule XXIX of the Standing Rules of the Senate, the following statement of regulatory impact of S. 2036 is made:

Titles I and III, administered by the National Science Foundation, authorize the NSF to grant funds to educational entities, or to consortia of entities, to advance mathematics and science education by means of teacher institutes, materials development, excellence in teaching awards, business-education partnerships, and a Director's discretionary fund. Such awards will be based on proposals submitted by the entities. NSF has already established a sophisticated system of peer review for determining which proposals will be funded as well as a standard manual for grants administration. It is, therefore, not anticipated by the Committee that extensive resources would necessarily be devoted to either the selection or monitoring procedures. It will be the responsibility of the proposers to indicate in the context of their individual submissions to NSF how they have met the requirements of the Act. To the extent that compliance with these requirements increases the amount requested for the grant, fewer grants may be awarded given the limited authorization of funds. The Committee believes, however, that the assurances requested by the Act are not burdensome and are necessary to ensure fairness and the most effective use of resources overall. It should be pointed out specifically that the Committee does not intend to place the National Science Foundation or its officers in a position of enforcement greater than what they now hold in the course of administering grants for scientific research throughout the nation. The Committee believes NSF is able to maintain strict accountability for the uses of funds in accordance with this Act through its traditional monitoring and administrative procedures.

Title II is a formula grant to states and local education agencies for the purpose of supplementing local efforts for teacher training, retraining, and inservice training. However, 10 percent of the funds authorized for this Title will be reserved for the Secretary of Education to expend on projects of national significance. While the Committee has been specific in setting the direction for these funds, i.e., establishing teaching skills as the first priority and expenditures for equipment and other resources only after certifying that training needs have been satisfied, and except for authorizing state traineeship programs and authorizing stipends, the Committee has not specified how such training, retraining, or inservice training should be carried out. It is not expected that the Department of Education will impose its own interpretation of congressional intent in this matter. Aside from clearing up possible ambiguities in definitions, etc., for which regulations already recorded for the Education Consolidation and Improvement Act may suffice, the Committee anticipates that the Department will go no further than did the Committee itself.

The provision which will require the greatest expense of personnel and paperwork is that which requires each state and local education agency to perform a comprehensive assessment of the mathematics and science education question in their respective areas of

concern. The Committee believes this assessment is necessary to provide a more up-to-date and complete picture of both the achievements needs of mathematics and science education.

The Committee anticipates that the bill will have no impact on personal privacy and will have an economic impact only insofar as teachers who receive awards or stipends will have additional income, and those who would otherwise have part-time school year or full-time summer employment will open up such jobs for others in the community. (Please refer to the Congressional Budget Office's estimate on total costs for both fiscal years 1984 and 1985 for the macroeconomic impact.)

VI. BUDGET ESTIMATE

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, D.C., June 1, 1983.

Hon. ORRIN G. HATCH,
Chairman, Committee on Labor and Human Resources,
U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: Pursuant to Section 403 of the Congressional Budget Act of 1974, the Congressional Budget Office has prepared the attached revised cost estimate for S. 1285, the Education for Economic Security Act.

Should the Committee so desire, we would be pleased to provide further details on this estimate.

Sincerely,

ALICE M. RIVLIN, *Director.*

CONGRESSIONAL BUDGET OFFICE—COST ESTIMATE

1. Bill number: S. 1285.
2. Bill title: Education for Economic Security Act.
3. Bill status: As reported by the Senate Committee on Labor and Human Resources, May 16, 1983.
4. Bill purpose: The bill establishes a number of new grant programs designed to improve the quality of mathematics and science instruction in the United States. Title I allows the National Science Foundation (NSF) to make grants to local educational agencies and institutions of higher learning for the establishment of teacher institutes and mathematics and science education development programs. This part of the bill also provides for the NSF to award Congressional merit scholarships to students at institutions of higher learning who demonstrate outstanding potential for, and who plan to pursue, a teaching career in mathematics, science, or engineering. The Director of the NSF is also authorized to make awards of up to $5,000 to outstanding elementary and secondary school teachers who have taught mathematics, science, or computer courses. In addition, Title I allows the NSF to make other discretionary grants to carry out any activity authorized by this title, establishes guidelines and rules concerning the distribution of grants, and requires the NSF to consider giving special consideration to grant applications from underrepresented and underserved popula-

tions. This part of the bill also authorizes appropriations to the NSF to carry out the provisions of the act.

Title II provides for grants to state and local educational agencies and to institutions of higher learning for the purpose of improving the quality of instruction in mathematics, science, computer learning, and foreign languages. The bill also authorizes appropriations to carry out this title, earmarks funds for different types of educational institutions, limits certain types of expenditures, and provides funding to the Secretary of Education to make discretionary grants.

Title III establishes a grant program within the NSF for the purpose of improving the quality of mathematics, science, engineering, and computer science instruction at the state and local level. These grants may be used for certain education programs, faculty exchange programs, research, equipment purchases, and student scholarships. This title also authorizes appropriations to cover the federal share of the cost of these programs and requires the participation of business concerns.

Title IV allows the President to make awards to outstanding secondary school teachers of mathematics and science. The President may make up to 100 awards each year and must select at least one teacher from each state, the District of Columbia, and the Commonwealth of Puerto Rico. The bill does not authorize any additional appropriations to carry out this title.

5. Estimated cost to the Federal Government:

[By fiscal years, in millions of dollars]

	1984	1985	1986	1987	1988
National Science Foundation (function 250):					
Authorization level	75	140	.....	.....	.....
Estimated outlays	24	72	67	35	17
Department of Education (function 500):					
Authorization level	354	404	.....	.....	.....
Estimated outlays	177	379	202	.....	.....
Total:					
Authorization level	429	544	.....	.....	.....
Estimated outlays	201	451	269	35	17

Basis of estimate

It is assumed for purposes of this estimate that the bill will be enacted prior to the beginning of fiscal year 1984, and that all amounts authorized will be appropriated.

National Science Foundation

The NSF programs included in Title I of the bill are authorized to receive appropriations totaling $45 million in 1984 and $80 million in 1985. Of the amount specified for 1984, $20 million is for teacher institutes, $5 million is for Congressional merit scholarships, and $20 million is for an existing graduate fellowship program. Of the amount authorized to be appropriated in 1985, $20 million is for teacher institutes, $20 million is for educational development programs, $15 million is for Congressional merit schol-

arships, $21 million is for the existing graduate fellowship program, and $4 million is for other NSF grants.

The NSF programs established by Title III are authorized to receive appropriations of $30 million in 1984 and $60 million in 1985. These funds are to be used to pay the federal share of the cost of the grant programs created by this title.

While Title IV provides authority for the President to make up to 100 excellence in teaching awards each year to outstanding mathematics and science teachers, it does not authorize any additional appropriations, nor does it detail the size of the awards. As a result, CBO assumes that these awards will be made out of existing authorizations.

The estimated outlays for these NSF programs are based on spending patterns experienced by similar NSF grant programs in the past.

Department of Education

The programs established by Title II are authorized for two years. The amounts authorized to be appropriated for these education programs are stated in the bill. Based on conversations with Committee staff, it was assumed that these programs will receive appropriations on a current year rather than a forward funding basis.

Given the nature of these grants, outlays are estimated at 50 percent in the first year, with the remainder falling in the second year.

6. Estimated cost to State and local governments: A number of the NSF grants authorized by Title I of the bill would provide funds to state and local educational agencies. The effect of these grants on state and local government budgets would depend on the proportion of funds going to public and private institutions. While these grants do not require matching contributions by grant recipients, the cost of administering the grants would be borne by the recipient. However, CBO does not expect these grants to significantly increase the administrative costs to state and local governments.

The NSF grants authorized by Title III require grant recipients to pay 50 percent of the cost of a program in order to qualify for federal funds. Of this amount, 30 percent is to be furnished by business concerns and 20 percent is to be supplied by the participating state agency, local government, or nonprofit organization. Assuming that state and local governments take responsibility for a maximum of 20 percent of the program's cost, their matching share would be $12 million in 1984 and $24 million in 1985.

The elementary and secondary education grants established under Title II of this bill go specifically to state and local governments. These grants are to be allocated on the basis of demographic data and have no state matching fund requirement. To the extent governments are currently expending funds for the specific purposes of this bill, there could be a substitution of federal dollars for state and local dollars. This substitution, however, would not be significant, since small amounts of state and local funds are currently being allocated for these specific science and mathematics programs. The other grant programs authorized by this bill are pri-

marily for individuals, institutions of higher education, and the private sector.

7. Estimate comparison: None.

8. Previous CBO estimate: On May 20, 1983, CBO prepared a cost estimate on S. 1285, as ordered reported by the Senate Committee on Labor and Human Resources, May 16, 1983. That estimate did not include the cost effects of Title III of the bill. This estimate supersedes the May 20 estimate.

9. Estimate prepared by: Charles Essick and Deborah Kalcevic.

10. Estimate approved by: C. G. Nuckols (for James L. Blum, Assistant Director for Budget Analysis).

VII. COMMITTEE CONSIDERATION

Numerous bills pertaining to mathematics and science education were referred to the Labor and Human Resources Committee for consideration. The Subcommittee on Education, Arts and Humanities held a series of four hearings on S. 530 and other proposals authorizing mathematics and science education programs under the Department of Education on March 8, 9 and 21, and April 8, 1983. A markup was held by the Subcommittee on S. 530 on April 20, 1983, and the bill was reported unanimously by roll call vote.

A hearing was held by the full Committee on Labor and Human Resources on April 18, 1983, on the role of the National Science Foundation in mathematics and science education.

A full Committee markup was held on May 11, 1983, and an original bill, combining elements of S. 530, S. 1055, and S. 1091, was ordered reported on a roll call vote of 16–2 after a Committee amendment was adopted by voice vote. This original bill was introduced as S. 1285.

The roll call vote to report the bill was as follows:

YEA	NAY
Mr. Hatch	Mr. Nickles (by proxy)
Mr. Stafford	Mr. Humphrey
Mr. Quayle	
Mr. Denton	
Mr. Weicker (by proxy)	
Mr. Grassley	
Mr. East (by proxy)	
Mrs. Hawkins	
Mr. Kennedy (by proxy)	
Mr. Randolph	
Mr. Pell	
Mr. Eagleton	
Mr. Riegle (by proxy)	
Mr. Metzenbaum (by proxy)	
Mr. Matsunaga	
Mr. Dodd (by proxy)	

VIII. SECTION-BY-SECTION SUMMARY

Section 1 establishes the short title of this Act as the "Education for Economic Security Act of 1983".

Section 2 states the purpose of the Act as improving the quality of mathematics and science teaching and instruction in the United States.

Definitions

Section 3(1) defines "area vocational education school" as having the same meaning as in section 195(2) of the Vocational Education Act of 1965.

Section 3(2) defines "Director" as the Director of the National Science Foundation.

Section 3(3) defines "elementary school" as having the same meaning as section 198(a)(7) of the Elementary and Secondary Education Act of 1965.

Section 3(4) defines "Governor" as the chief executive of a state.

Section 3(5) defines "Foundation" as the National Science Foundation.

Section 3(6) defines "institution of higher education" as having the same meaning as section 1201(a) of the Higher Education Act of 1965.

Section 3(7) defines "local educational agency" as having the same meaning given under section 198(a)(10) of the Elementary and Secondary Education Act of 1965.

Section 3(8) defines "secondary school" as having the same meaning as given under section 198(a)(7) of the Elementary and Secondary Education Act of 1965.

Section 3(9) defines "Secretary" as the Secretary of Education.

Section 3(10) defines "State" as each of the several States, the District of Columbia, and Puerto Rico.

Section 3(11) defines "State agency for higher education" as the State board of higher education, or any other agency primarily responsible for the State supervision of higher education. If no such agency exists, an officer or agency shall be designated by the Governor of the State.

Section 3(12) defines "State education agency" as having the same meaning given under section 1001(k) of the Elementary and Secondary Education Act of 1965.

Title I—National Science Foundation mathematics and science education programs

Part A—Teacher institutes

Section 101 authorizes the National Science Foundation to make grants to local educational agencies and institutions of higher education, applying jointly, to establish and operate teacher institutes.

Section 102(a) requires that each local educational agency and institution of higher education desiring to receive a grant submit a joint application containing information that the Director may require. One or more local educational agencies may apply jointly with institutions of higher education.

Section 102(b)(1) provides that each application shall describe the establishment and operation of a teacher institute.

Section 102(b)(1)(A) states that the application must designate whether the institute is to be a full-time summer or part-time school year operation, or both.

Section 102(b)(1)(B) states that the application must describe the course of study to be offered.

Section 102(b)(1)(C) states that the application must include an estimate of the number of teachers to be enrolled, including the number of teachers from private elementary and secondary schools, and the selection procedures.

Section 102(b)(1)(D) states that the application must describe the location and facilities to be used.

Section 102(b)(1)(E) states that the application must describe the teaching and administrative staff.

Section 102(b)(1)(F) states that the application must state whether academic credit is to be awarded.

Section 102(b)(1)(G) states that the application must include a schedule of stipends to be paid to attending teachers as well as allowances for expenses, and provisions assuring that teachers will not receive a stipend authorized under both this section and under Title II provisions.

Section 102(b)(2) states that the design and operation of the institute must involve both the subject matter department and the teacher education department of the institution(s) of higher education.

Section 102(b)(3) states that the application must provide for the prior and continuing consultation with the state education agency.

Section 102(b)(4) states that the application must contain such additional assurances as the Director deems essential to comply with the purposes and requirements of this part.

Section 113(a) provides that the Director shall assure an equitable distribution of institutes within and among states. The Director will award not less than one institute in each state.

Section 113(b) provides that no grant to a single applicant will exceed $200,000 in any fiscal year.

Section 114 provides that institutes may involve advanced technology business concerns and other business concerns which are able to assist in teaching mathematics and science.

Section 115 requires that every effort will be made to ensure that consideration is given to applications designed to meet the needs of underrepresented and underserved populations.

Part B—Materials development

Section 121 authorizes the Foundation to enter into agreement with institutions of higher education or local education agencies for research, development and dissemination of materials for teacher training and retraining and for courses of study in mathematics and science in elementary and secondary schools.

Section 122 states that the Director may reasonably require certain information and procedures regarding the submission of applications.

Section 122(1) states that applications must incude an agreement between the applicant and a local education agency if the applicant is an institution of higher eduation or between the applicant and an institution of higher education if the applicant is a local education agency.

Section 122(2) states that planning and implementation of the institution of higher education will include both the subject matter department and the teacher education department.

Section 122(3) states that the applicant has consulted with the state agency for higher education or the state education agency.

Section 123 states that special consideration shall be given to applications which are for the development of instructional materials and materials to meet the needs of underrepresented and underserved populations.

Part C—Mathematics and science excellence in teaching awards

Section 131(a) provides that the Foundation is authorized to make awards for excellence in teaching mathematics and science.

Section 131(b)(1) provides that excellence in teaching awards shall be made to teachers in elementary or secondary schools who have taught mathematics, science, or computer learning and have demonstrated outstanding qualifications as teachers of mathematics and science.

Section 131(b)(2) provides that each award made shall not exceed $5,000.

Section 131(s) provides that the Foundation shall adopt selection procedures for making awards. The selection procedures shall be designed to assure that the awards will be equitably distributed among the states.

Section 132 states that no excellence in teaching award may be made unless an application is submitted to the Foundation containing information that the Director may require.

Part D—Congressional merit scholarships

Section 141 states the short title of this part cited as the "Congressional Merit Scholarships in Mathematics, Science, and Engineering Education."

Section 142(a) states that the Foundation is authorized to award scholarships to individuals who are enrolled in institutions of higher education and who plan to pursue a career in teaching in the fields of mathematics, science, and engineering.

Section 142(b) states that scholarships shall be awarded for periods that the Foundation may prescribe, but not be exceed four academic years.

Section 142(c)(1) provides that a student awarded a scholarship may attend any institution of higher education offering courses of study designed to prepare them for teaching careers. Such awards shall be available not sooner than the third undergraduate year.

Section 142(c)(2) states that in order to be eligible for a scholarship, each individual shall concentrate at the undergraduate level in mathematics or science and indicate a serious intent to teach at the elementary or secondary school level, or an individual may concentrate at the undergraduate level in engineering and indicate a serious intent to teach at the post-secondary level in an engineering discipline in which the Foundation has determined a shortage of qualified teachers.

Section 142(d) states that not more than 25 percent of the scholarships available shall be available for students concentrating, at the undergraduate level, in engineering.

Section 143(a) provides that the Foundation shall establish criteria for the selection of merit scholars.

Section 143(b)(1) states that the number of individuals to be selected will not exceed the product of the number of Members of Congress for each state, multiplied by two, and that the individuals will be selected from among the residents of each state (in the cases of District of Columbia and Puerto Rico, the selection cannot exceed ten individuals).

Section 143(b)(2) states that each recipient of a Congressional Merit Scholarship must agree to pursue a career in mathematics and science teaching for not less than two years for each academic year in which a merit scholarship award is received.

Section 144(a) states that each student awarded a Merit Scholarship shall receive an award of $5,000 for each academic year of study.

Section 144(b) states that a recipient shall continue to receive a scholarship only if the Foundation determines that the student is maintaining satisfactory progress in, and devoting full-time to, the course of study for which the scholarship is awarded.

Section 144(c) authorizes the Foundation to require reports containing information necessary from any student awarded a Merit Scholarship. Such reports are to be accompanied by a certificate from any appropriate official of the institution of higher education and approved by the Foundation stating that the student is making satisfactory progress in and devoting full-time to the course of study for which the scholarship is awarded.

Part E—Discretionary funds of the director

Section 151(a) provides that the Director is authorized to make grants to and to enter into contracts with any public agency or any private orgnization to carry out any activity authorized by this title.

Section 151(a)(1) provides that the Director is authorized to conduct a faculty exchange program between institutions of higher education and eligible institutions.

Section 151(a)(2) State that the Director is authorized to conduct programs of national significance promoting the improvement of instruction in the fields of mathematics, science, and engineering.

Section 151(b) defines the term "eligible institution" as an institution of higher education in any state which has an enrollment which includes a substantial percentage of students who are members of a minority group or who are economically or educationally disadvantaged, or is located in a community that is not within commuting distance of a major institution of higher education and demonstrates a commitment ot meet the special educational needs of students who are members of a minority group or are economically or educationally disadvantaged.

Part F—General provisions

Section 161(a)(1) provides that in order to carry out the provisions of this title, the Foundation is authorized to appoint and fix the

compensation of personnel, except employees shall not be compensated at greater than rate exceeding the GS–18 daily rate, set forth in section 5332 of title 5, United States Code.

Section 161(a)(2) states that the Foundation is authorized to procure temporary and intermittent services of experts and consultants as are necessary to the extent authorized by section 3109 of title 5, United States Code, but at rates not greater than the GS–18 daily rate.

Section 161(a)(3) states that the Foundation is authorized to prescribe regulations it deems necessary governing the manner in which its functions shall be carried out.

Section 161(a)(4) states that the Foundation is authorized to receive money and other property donated, bequeathed, or devised without condition or restriction, and to use, sell, or otherwise dispose of such property.

Section 161(a)(5) states that the Foundation is authorized to accept and utilize the services of volunteers and noncompensated personnel and reimburse them for travel expenses, including per diem as authorized by section 5703 of title 5, United States Code.

Section 161(a)(6) states that the Foundation is authorized to enter into contracts, grants, or other arrangements which may, with the concurrence of two-thirds of the members of the National Science Board, be entered into without performance or other bonds, and without regard to section 3709 of the Revised Statutes, as amended.

Section 161(a)(7) states that the Foundation is authorized to make advances, progress, and other payments which the Board deems necessary.

Section 161(a)(8) states that the Foundation is authorized to make other necessary expenditures.

Section 161(b) states that the Foundation shall submit to the President and to the Congress an annual report of its operations.

Section 162 states that the provisions of section 211 of this act shall apply to the payments made under this title.

Section 163 states that the provisions of section 432 of the General Education Provisions Act, relating to prohibition against Federal control of education, shall apply to each program authorized by this title.

Authorization of appropriations

Section 164(a) states that there are authorized to be appropriated $20,000,000 for each of the fiscal years 1984 and 1985 to carry out the provisions of part A of this title.

Section 164(b) states that there are $20,000,000 authorized to be appropriated for the fiscal year 1985 to carry out the provisions of part B of this title.

Section 164(c) states that there are authorized to be appropriated $5,000,000 for the fiscal year 1984 and $15,000,000 for the fiscal year 1985 to carry out the provisions of part D of this title.

Section 164(d) states that there are authorized to be appropriated $4,000,000 for the fiscal year 1985 to carry out the provisions of parts C and E of this title.

Section 164(e) states that there are authorized to be appropriated to the Foundation $20,000,000 for the fiscal year 1984 and $21,000,000 for the fiscal year 1985 to carry out the graduate fel-

lowship program under the National Science Foundation Act of 1950.

Title II—Education for economic security

Statement of purpose

Section 201 provides that the purpose of this title is to make financial assistance available to state and local educational agencies and to institutions of higher education, to improve the skills of teachers and instruction in mathematics, science, computer learning, and foreign languages, and to increase the access of all students to such instruction.

Section 202(1) states the definition of the term "junior of community college" as meaning an institution of higher education that admits as regular students who are beyond the age of compulsory school attendance in their state.

Section 202(2) states that a "junior or community college" is an institution of higher education which does not provide an educational program for which it awards a bachelor's degree.

Section 202(3) states that a "junior or community college" provides an educational program of not less than two years that is acceptable for full credit toward a bachelor's degree, or offers a two-year program designed to prepare a student to work as a technician or at the semiprofessional level in engineering, scientific, or other technological fields.

Section 203(a) states that the Secretary is authorized to make discretionary grants and grants to states.

Section 203(b) provides authorization to appropriate $350,000,000 for the fiscal year 1984 and $400,000,000 for the fiscal year 1985.

Section 204(a)(1) provides that from 90 percent of the amount appropriated to carry out this title for each fiscal year the Secretary shall allot to each state an amount which bears the same ratio to such 90 percent as the number of children aged five through seventeen. No state shall receive less than one-half of 1 percent of the amount available under this subsection.

Section 204(a)(2) provides that the Secretary shall reserve the remaining 10 percent to carry out section 212, relating to discretionary grants of national significance.

Section 204(a)(3) provides that the term "state" does not include Guam, American Samoa, the Virgin Islands, the Northern Mariana Islands, or the trust territory of the Pacific Islands.

Section 204(a)(4) provides that the number of children aged 5–17 shall be determined by the Secretary on the basis of the most recent data available.

Section 204(b) states that the Secretary may reallocate unused amounts of a state's allotment to other states on a proportional basis.

Section 204(c) provides that there are authorized to be appropriated amounts equal to not more than 1 percent of the amount appropriated for such year under this title which the Secretary shall allocate among Guam, American Samoa, The Virgin Islands, the Northern Mariana Islands, or the Trust Territory of the Pacific Islands. In addition, for each fiscal year the Secretary shall allot from not less than one-half of such amount, to an agency designat-

ed by the Secretary, for programs for children in elementary and secondary schools operated for Indian children by the Department of the Interior.

Section 205(a) provides that for each of the fiscal years 1984 and 1985, 70 percent of each state's allotment shall be used to strengthen elementary and secondary education programs.

Section 205(b) states that 30 percent of a state's allotment shall be used for higher education programs.

Section 206(b)(1) provides that not less than 70 percent of the amount available for elementary and secondary programs shall be distributed to local educational agencies within the state.

Section 206(b)(1)(A) states that each local educational agency shall use funds distributed for the expansion and improvement of inservice training and retraining of teachers and other appropriate school personnel in the fields of mathematics and science, including vocational education teachers who use mathematics and science in the courses of study that the teachers teach.

Section 206(b)(1)(B) states that if the local educational agency determines that the agency has met its need for such training and retraining, the agency may spend its allotment on computer learning and instruction, foreign language instruction, and instructional materials and equipment related to mathematics and science instruction. Such training and instruction may be carried out through agreements with public agencies, private industry, institutions of higher education, and nonpublic private organizations, including museums, libraries, educational television stations, professional science, mathematics and engineering associations, and other appropriate institutions. A local educational agency may carry out the activities authorized by this paragraph with one or more other local educational agency or both. Each local educational agency shall assure that programs take into account the need for greater participation of students from historically underrepresented groups.

Section 206(b)(2) provides that the state educational agency shall distribute 50 percent of the funds available to local educational agencies within the state according to the relative number of children enrolled in public and nonpublic schools and 50 percent on the basis of the relative number of children aged 5–17 from families above and below the poverty level as determined under section 111(c)(2)(A) of the Elementary and Secondary Education Act of 1965.

Section 206(b)(3) provides that the state educational agencies shall renew payments to LEAs based upon the criteria set forth in the previous section and a determination by the state educational agency that the local educational agency is implementing the program so that a substantial number of teachers in the public and private schools in the school district of such agency are served and several grade levels of instruction are involved in the program.

Section 206(c)(1) states that if a local educational agency is spending funds under section 206(b)(1)(B), not to exceed 30 percent of the funds available to the local educational agency may be used for the purchase of computers and computer-related instructional equipment.

Section 206(c)(2) states that if a local educational agency is spending funds under section 206(b)(1)(B), not to exceed 15 percent of the funds available may be used to strengthen instruction in foreign languages.

Section 206(d) states that not less than 20 percent of the amount available to the state educational agency shall be used for demonstration and exemplary programs for teacher training, retraining, and inservice upgrading of teacher skills, instructional equipment and materials, special projects and historically underrepresented and underserved populations, and gifted and talented students, and dissemination of information to all local educational agencies relating to the exemplary programs. The state educational agency shall reserve not less than 20 percent of the available amount for demonstration and exemplary projects for projects involving historically underrepresented and underserved populations of students.

Section 206(e) states that not less than 5 percent of the amount available to the state education agency may be used to provide technical assistance to local educational agencies, institutions of higher education, and nonprofit organizations, including museums, libraries, and educational television stations.

Section 206(f) provides that the state educational agency may expend up to 5 percent of the available amount for the state assessment required by section 208 of this title, and for the costs for administration and evaluation of the program assisted under this title.

Section 207(a) provides that the amount apportioned to each state shall be used by the state agency for higher education for higher education programs.

Section 207(b)(1) provides that not less than 75 percent of the amount available to the state agency for higher education shall be used for grants to institutions of higher education on a competitive basis. The state agency for higher education shall make every effort to ensure equitable participation of private and public institutions of higher education.

Section 207(b)(2) provides that the amount available shall be used for the following: Traineeship programs for new teachers who will specialize in teaching mathematics and science at the secondary school level, for the retraining in mathematics and science for secondary school teachers who specialize in disciplines other than mathematics and science, stipends for participation in institutes authorized under Title I, and the inservice training for elementary, secondary, and vocational school personnel to improve their teaching skills in the fields of mathematics and science, including stipends for participation in institutes authorized under Title I. Each institution receiving a grant shall assure that programs take into account the need for greater participation of students and teachers from historically underrepresented and underserved groups, including females, minorities, individuals with limited-english proficiency, the handicapped, migrants, and the gifted and talented.

Section 207(b)(3) provides that no institution of higher education may receive a grant for an elementary or secondary school teacher unless the institution enter into an agreement with a local education agency, or consortium of such agencies, to provide inservice training and retraining for the elementary and secondary school

teachers in the public and private schools of the school district of each such agency.

Section 207(c)(1) provides that not less than 20 percent of the amount available to the state agency for higher education shall be used for cooperative programs among institutions of higher education, local educational agencies, state educational agencies, private industry, and private nonprofit organizations including museums, libraries, educational television stations, and professional mathematics, science, and engineering societies and associations. The state agency for higher education shall give special consideration to programs involving consortial arrangements which include local educational agencies.

Section 207(c)(2) states that critical foreign languages include those designated by the Secretary pursuant to section 211(d).

Section 207(d) provides that not exceeding 5 percent of the available amount may be used by the state agency for higher education for the state assessment and for the costs of administration and evaluation of the program assisted under this title incurred by the State higher education agency.

Section 208(a) provides that each state desiring to receive grants shall prepare and submit to the Secretary, not later than the end of the first year for which funds are available, an assessment of the status of mathematics, science, foreign language, and computer learning with the state. Each assessment shall be prepared after an examination of the local assessments. Each such assessment shall include a description and a five year projection of: the availability of qualified mathematics, science, foreign language, and computer learning teachers at the secondary and postsecondary education levels, the qualifications of teachers in these subjects in the elementary, secondary, and postsecondary levels, the state standards for teacher certification, including any special exception currently made, for teachers of such subjects, the availability of adequate curricula, instructional materials and equipment, and the degree of access to instruction in mathematics, science, foreign languages, and computer learning of historically underrepresented and underserved individuals and of the gifted and talented.

Section 208(b) provides that each assessment shall also describe the programs, initiatives, and resources committed within the state to improve the following: teacher recruitment and retention, teacher qualifications and skills in the fields of mathematics, science, foreign languages, and computer learning, curricula and instructional materials in these subjects, and access to instruction for historically underrepresented and underserved populations, and for the gifted and talented.

Section 208(c)(1) provides that each state assessment shall be developed in consultation with the Governor, state legislature, state board of education, local educational agencies and representatives of vocational secondary and area vocational education schools, public and private institutions of higher education, teacher organizations, private industry, other public organizations (including libraries, museums, and educational television stations, and professional scientific and mathematics associations), and private elementary and secondary schools within the states.

Section 208(c)(2) states that each state assessment shall be submitted jointly by the state educational agency and the state agency for higher education.

Section 209(a) provides that each state desiring to receive grants shall file an application with the Secretary containing information that the Secretary may require.

Section 209(b) provides that each application shall:

(1) Designate the state educational agency and the state agency for higher education,

(2) Describe the programs for which assistance is sought,

(3) Provide assurances that payments will be distributed by the state in accordance with provisions of sections 207 and 208,

(4) Provide procedures for submitting applications for programs described in sections 206 for distribution of payments under this title within the state and for approval of applications by the appropriate state agency, including procedures to assure that the appropriate state agency will not disapprove an application without notice and opportunity for a hearing,

(5) Provide assurances that the state will prepare and submit the assessment required under section 208 and in the second year for which funds are available will use funds for purposes consistent with the findings of the state assessment,

(6) Assure that for programs described in section 206, the provisions of sections 211 and 212 will be carried out and that evaluations will be performed,

(7) Provide assurances that federal funds made available will be used to supplement the level of funds that would be available for the purposes described in sections 207 and 208, and

(8) Provide such fiscal control and accounting procedures as may be necessary to ensure proper accounting of federal funds paid to the applicant (state) and to ensure the verification of programs assisted under the application.

Section 209(c) provides that the Secretary shall expeditiously approve any state plan that meets the requirements of this section.

Section 210(a) provides that each local educational agency which desires to receive a payment from the state educational agency shall provide to the state educational agency an assessment of the local educational agency's need for assistance in training, retraining, and inservice training for teachers and appropriate school personnel in the areas of mathematics and science, and for assistance in improving instructional materials and equipment.

Section 210(b) provides that such assessment shall also describe the program developed by the local education agency and a description of how it will meet program needs.

Section 210(c) provides that if a local educational agency determines that it has met its teacher retraining and inservice training needs in mathematics and science and desires to expend its funds on other activities the local educational agency may request the state educational agency to waive such training requirements.

Section 211(a) provides that to the extent consistent with the number of children in the state or in each educational agency who are enrolled in private elementary and secondary schools, such state or LEA shall make provision for assuring the equitable participation of such children in the purposes and benefits of this title.

Section 211(b) provides that to the extent consistent with the number of children in the state or in the local educational agency enrolled in private elementary and secondary schools, such state, state educational agency, or state agency for higher education shall make provision for inservice and teacher training and retraining as will assure equitable participation of teachers in such schools in programs under this title.

Section 211(c) provides that if by reason of law the local educational agency is prohibited from providing for the participation of children or teachers from private schools, or if the Secretary determines that a state or local educational agency has substantially failed or is unwilling to provide for such participation, the Secretary shall waive requirements and arrange for the provision of services to children or teachers. These services shall be subject to the requirements of this section. Waivers shall be subject to the requirements of the Education Consolidation and Improvement Act of 1981.

Section 212(a) provides that 10 percent of amounts appropriated for this title shall be available to the Secretary to make grants for programs of national significance.

Section 212(b)(1) provides that from 75 percent of the amount available, the Secretary shall make grants to state and local educational agencies, institutions of higher education, and private nonprofit organizations including museums, libraries, educational television stations, and professional mathematics, science and engineering societies and associations for programs of national significance in mathematics and science instruction, computer learning, and foreign languagge instruction in critical languages.

Section 212(b)(2) provides that the Scretary shall reserve not to exceed $3,000,000 in each fiscal year for the Director of the National Institute of Education for the purpose of conducting evaluation and research activities. One-half of these funds shall be used for research on improving teacher training and mathematics and science materials.

Section 212(c) provides that from 25 percent of the amount available the Secretary shall make grants to institutions of higher education for the improvement and expansion of instruction in critical foreign languages.

Section 212(d) provides that in determining which languages are critical to national security, economic, and scientific needs, the Secretary shall consult with the Secretary of State, the Secretary of Defense, the Secretary of Health and Human Services, and the Director of the National Science Foundation, The Secretary shall publish in the Federal Registrar a list of critical foreign languages.

Section 213(a) provides that from the amounts appropriated under section 203(b), the Secretary shall pay the costs of the programs and activities described in the application approved under section 209, and the costs of programs of national significance.

Section 213(b) provides that payments shall be made as soon after approval of the application as practicable.

Title III—Partnerships in education for mathematics, science and engineering

Section 301 provides that this title may be cited as the "Partnerships in Education for Mathematics, Science, and Engineering Act."

Section 302 provides that it is the purpose of this title to supplement state and local resources to do the following:

(1) Improve the quality of instruction in the fields of mathematics, science, and engineering in the state;

(2) Furnish additional resources and support for research, student scholarships, and faculty exchange programs in the fields of mathematics and science;

(3) Encourage partnerships in education between the business community, institutions of higher education, and elementary and secondary schools in the community.

Section 303(1) defines the term "Foundation" as the National Science Foundation."

Section 303(2) defines the term "institution of higher education" as having the same meanig given in section 1201(a) of the Higher Education Act of 1965.

Section 303(3) defines the term "States" to include the 50 states, the District of Columbia, and Puerto Rico.

Section 303(4) defines the term "State agency for higher education" as meaning the state board of higher education or other agency primarily responsible for the state supervision of higher education, or if there is no such agency an agency designated by the Governor or by state law.

Section 304(a) provides that the Foundation is authorized to make grants to states to pay the Federal share of the costs of authorized activities.

Section 304(b) provides that there are $30,000,000 authorized to be appropriated for the fiscal year 1984 and $60,000,000 for the fiscal year 1985 to carry out the provisions of this title.

Section 305(a)(1) provides that a state may use payments received under this title in any fiscal year for higher education programs and activities described in this subsection.

Section 305(a)(2) provides that grants under this subsection may be used for partnership in education programs such as: improvement of instruction in mathematics, science, computer science, and engineering, for awarding scholarships to students at institutions of higher education in these fields, faculty exchange programs between institutions of higher education and business concerns within the state, research in the fields of mathematics, science, computer science, and engineering, acquisition, rehabilitation, and renovation of equipment and instumentation for use in instruction in these fields, and programs to promote public understanding of science, mathematics, and computer science.

Section 305(a)(3) provides that education partnerships under his subsection may include institutions of higher education, business concerns, nonprofit private organizations, local educational agencies, professional mathematics and scienctific associations, museums, libraries, educational television stations, and if the state desires, appropriate state agencies.

Section 305(b)(1) provides that a state may use payments received under this title in any fiscal year for programs and activities described in this subsection.

Section 305(b)(2) provides that local educational agencies may carry out elementary and secondary school partnership programs in which:

(1) Elementary and secondary school teachers who teach mathematics, science, or computer science are made available to local business concerns,

(2) Personnel of local business concerns serve as consultants, lecturers teaching assistants, or teachers of mathematics, science, or computer science in the elementary and secondary schools within the state,

(3) Training and retraining is furnished to elementary and secondary school teachers of mathematics, science, and computer science, under a cooperative arrangement between the state or local educational agency and appropriate business concerns, and

(4) Secondary school students observe, participate, and work in local business concerns with establishments located in the community.

Section 305(b)(3) provides that partnerships under this subsection may include local educational agencies, business concerns, nonprofit private organizations, institutions of higher education, professional mathematics and scientific associations, museums, libraries, educational television stations, and if the state so desires, appropriate state agencies.

Section 306(a) provides that any state which desires to receive a grant shall make an application to the Foundation at such time, and accompanied by information that the Foundation may require.

Section 306(a)(1) provides that each application shall designate the state agency for higher education as the state agency responsible for the supervision of programs and activities described in section 305(a), and the state educational agency as the state agency responsible for the administration and supervision of programs described in section 305(b) assisted under this title.

Section 306(a)(2) provides that each application shall describe the activities for which assistance is sought.

Section 306(a)(3) provides assurances that not more than 5 percent of the state's allotment in any fiscal year may be expended on administrative expenses at the state level or at the local level by state and local educational agencies.

Section 306(a)(4) states that applications must provide assurances that 30 percent of the funds for each such project will be furnished by business concerns within the community, and that 20 percent of the funds will be supplied by the state, the institution of higher education or the local educational agency participating in the program, the other parties participating in the program.

Section 306(a)(4)(C) states that no stipend will be paid directly to employees of a profitmaking business concern.

Section 306(a)(4)(D) states that teachers participating in an exchange program may not be employed by the participating business concern with which the teacher served within three years after the end of the exchange program. An exception is if the teacher repays

the full cost of the exchange program to the state and local educational agency.

Section 306(a)(5) states that each application shall provide assurances that whenever scholarships are awarded, such scholarships must be awarded to undergraduate students at institutions of higher education who wish to pursue a course of study in mathematics or science, engineering or computer science and that each student awarded a scholarship under this title will receive a stipend which shall not exceed $750 for each academic year of study for which the scholarship is awarded.

Section 306(a)(6) states that each application shall provide assurances that consideration is given to programs and activities designed to meet the needs of underrepresented and underserved populations.

Section 306(a)(7) states that each application shall provide assurances that in the consideration of applications submitted under section 307(a) that equitable consideration is given to applications submitted by private and public institutions of higher education.

Section 306(a)(8) states that each application shall provide additional assurances as the Foundation determines essential to ensure compliance with the requirements of this title.

Section 306(b) provides that a regional consortium of states or two or more states may file a joint application under the provisions of subsection (a) of this section.

Section 307(a) provides that an institution of higher education within a state which desires to receive a grant shall submit an application to the state agency on higher education in accordance with the provisions of this section. Each application shall be submitted jointly by the institution of higher education, each business concern, and other party that is to participate in the program for which assistance is sought. Each application shall describe the activities for which assistance is sought and contain other assurances and agreements as the state agency on higher education deems essential to assure compliance with the provisions of this title.

Section 307(b) provides that a local education agency within a state which desires to receive a grant under this title shall submit an application to the state education agency in accordance with this section. Each application shall be submitted jointly by the local educational agency, each business concern, and the other party that is to participate in the program for which assistance is sought.

Section 307(b)(1) provides that each such applicant shall describe the activities for which the local education agency seeks assistance under this title.

Section 307(b)(2) provides that each application shall provide assurances that the applicable provisions of clause (4) of section 306 are met.

Section 307(b)(3) provides that each application shall contain other assurances and agreements as the state education agency determines essential to assure compliance with the provisions of this title.

Section 309 provides that the provisions of section 211 of this act shall apply to the payments made under this title.

Section 310(a)(1) provides that the Foundation shall pay to each state having an application approved under section 308, the Federal share of the cost of the program described in the application.

Section 310(a)(2) provides that the Federal share for each fiscal year shall be 50 percent.

Section 310(a)(3) provides the non-Federal share of payments under this title may be in cash or in-kind, fairly evaluated, including plant, equipment, or services.

Section 310(b) provides that not more than 15 percent of the funds appropriated under this title may be paid to any single state.

Title IV—Presidential awards for teaching excellence in mathematics and science

Section 401(a) provides that the President is authorized to make presidential awards for teaching excellence in mathematics or science to secondary school teachers of mathematics or science who have demonstrated outstanding teaching qualifications.

Section 401(b) provides that each year the President is authorized to make 100 awards under subsection (a) of this section. In selecting secondary school teachers for the award authorized by this section, the President shall select at least one secondary school teacher from each State, the District of Columbia, and Puerto Rico.

Section 402 provides that the President shall carry out the provisions of this title, including the establishment of the selection procedures, after consultation with the Secretary of Education, the Director of the National Science Foundation, and other appropriate officials of Federal agencies.

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